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THE EFFECT OF PHOSPHINE, SMOKING AND AGE ON STABLE CHROMOSOME ABERRATION FREQUENCIES IN AGRICULTURAL WORKERS.

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Whole chromosome painting probes were used to determine whether occupational exposure to phosphine (PH_3), a pesticide which is suspected to be carcinogenic, leads to detectable cytogenetic damage in agricultural workers. Blood samples were collected from 50 individuals in Minnesota aged 18-62, including smokers and non-smokers, to analyze the frequency of stable aberrations and aneuploidy. Individuals were classified according to phosphine exposure and smoking status. Twenty-three of the donors had been occupationally exposed to phosphine; twenty-seven were not exposed but were similar in age and smoking status. Chromosomes one, two and four were painted simultaneously and 1000 cell equivalents were analyzed from each donor. No differences in the frequency of stable chromosome aberrations or aneuploidy were found in the phosphine exposed group or the smoking group. There was, however, a significant increase in the frequency of stable aberrations with age ($p=0.0023$). This study is being repeated on the same subjects using human chromosome 14 and 18 whole chromosome painting probes to compare the frequencies of aberrations and aneuploidy in the different groups of chromosomes. Work performed under the auspices of the US DOE by LLNL, contract no. W-7405-ENG-48, with support from NIH grant no. CA61183.